

Listing of Claims:

This listing of the claims replaces all prior versions, and listings, of the claims in the application. The status of each claim is indicated. Currently amended claims are shown with additions underlined and deletions in ~~striketrough text~~.

1. (Previously presented) A method, comprising:

updating data values associated with at least a portion of a virtual hand displayed in a graphical environment of a host computer based on manipulation of at least a portion of an object coupled to the host computer, the portion of the virtual hand directly contacting a virtual body part to produce a virtual palpation within the graphical environment; and

outputting haptic feedback to the object when the virtual palpation within the graphical environment occurs.
2. (Previously presented) The method of claim 1 wherein the host computer includes an application program having a palpation training program.
3. (Previously presented) The method of claim 1, the host computer including an application program including a palpation training program, the method further comprising:

locating a predetermined target associated with the region in the graphical environment.
4. (Previously presented) The method of claim 3, the haptic feedback being a first haptic feedback, the method further comprising:

outputting a second haptic feedback, the second haptic feedback being a scaled version of the first haptic feedback.
5. (Previously presented) The method of claim 1, the haptic feedback being a first haptic feedback, the method further comprising:

outputting a second haptic feedback associated with a position of the virtual hand in a second region of the graphical environment.

6. (Canceled)

7. (Previously presented) The method of claim 1, wherein the haptic feedback simulates a pulse.

8. (Previously presented) The method of claim 1, wherein the haptic feedback is associated with a simulated feature that is at least one of on the surface of the region within the graphical environment and below the surface of the region within the graphical environment.

9. (Previously presented) The method of claim 1, wherein the haptic feedback includes a vibration.

10. (Previously presented) The method of claim 1, wherein the haptic feedback includes a spring force.

11. (Previously presented) The method of claim 1, wherein the object includes a mouse.

12. (Previously presented) The method of claim 11, wherein the mouse includes an actuator coupled to a housing, the outputting the haptic feedback includes outputting the haptic feedback via the actuator.

13. (Previously presented) The method of claim 12, wherein the haptic feedback is configured to simulate a pulse.

14. (Previously presented) The method of claim 11, the mouse further comprising a grounded linkage.

15. (Previously presented) The method of claim 14, wherein the outputting the haptic feedback includes outputting the haptic feedback via the grounded linkage.

16. (Previously presented) A method, comprising:
updating data values associated with at least a portion of a virtual hand displayed in a graphical environment of a host computer based on manipulation of at least a portion of an object coupled to the host computer; and
outputting haptic feedback to the object based on a signal associated with an interaction of the portion of the virtual hand with a graphical representation of a virtual being, the haptic feedback being a simulated pulse of the virtual being.

17. (Previously presented) The method of claim 16, wherein the outputting the haptic feedback includes outputting the haptic feedback based on receiving instructions from the host computer, the instructions including a pulse-taking training program including an instruction to take the simulated pulse of the simulated being.

18. (Previously presented) The method of claim 16, the haptic feedback being a first haptic feedback, the graphical representation of the simulated being having a first region and a second region different from the first region, the signal being associated with the interaction of the portion of the virtual hand with the first region of the graphical representation, the method further comprising:

outputting a second haptic feedback based on a signal associated with an interaction of the portion of the virtual hand with the second region of the graphical representation.

19. (Previously presented) The method of claim 18, wherein the second haptic feedback is a scaled version of the first haptic feedback.

20. (Canceled)

21. (Previously presented) The method of claim 16, wherein the haptic feedback includes a vibration.

22. (Previously presented) The method of claim 21, wherein the haptic feedback includes a substantially sinusoidal waveform.

23. (Previously presented) The method of claim 16, wherein the object includes a mouse having an actuator coupled to a housing, the outputting the haptic feedback includes outputting the haptic feedback via the actuator.

24. (Previously presented) A method, comprising:
updating data values associated with at least a portion of a virtual hand displayed in a graphical environment of a host computer based on manipulation of at least a portion of an object coupled to the host computer, the portion of the virtual hand directly contacting a virtual body part to produce a virtual palpation within the graphical environment; and
outputting haptic feedback to the object based on interaction of the portion of the virtual hand with a graphical representation within the graphical environment, the haptic feedback simulating a palpated feature that is one of on and below the surface of the graphical representation.

25. (Previously presented) The method of claim 24, wherein the application program includes a palpation training program including an instruction to perform a simulated palpation procedure.

26. (Previously presented) The method of claim 24, wherein the haptic feedback includes a spring force.

27. (Previously presented) The method of claim 24, wherein the object includes a mouse.

28. (Previously presented) The method of claim 27, wherein the mouse includes a grounded linkage.

29. (Previously presented) The method of claim 28, wherein the outputting the haptic feedback includes outputting the haptic feedback via the grounded linkage.

30. (Previously presented) The method of claim 27, the mouse including at least one of a force detector and pressure detector, the method further comprising detecting at least one of a force and a pressure.

31. (Previously presented) The method of claim 30, wherein the outputting the haptic feedback is associated with the detected at least one of the force and the pressure.

32. (Previously presented) The method of claim 24, wherein the simulated palpated feature is simulated as physically below the graphical representation.

33. (Previously presented) The method of claim 24, wherein the haptic feedback simulates a three dimensional contour of the graphical representation.

34. (Previously presented) The method of claim 33, wherein the object is substantially constrained to movement in a geometric plane.

35. (Previously presented) A simulator, comprising:

a manipulatable object in communication with a processor, the processor associated with a graphical representation of at least a portion of a virtual being;

a sensor coupled to the manipulatable object and in communication with the processor, the sensor configured to update data values associated with at least a portion of a virtual hand in the graphical representation based on a manipulation of the manipulatable object; and

an actuator coupled to the manipulatable object and configured to output haptic feedback based on interaction of the portion of the virtual hand with a region within the graphical representation, the haptic feedback simulating the palpation of the virtual being.

36. (Previously presented) The simulator of claim 35, further comprising a computer readable medium having instructions stored thereon to cause a palpation simulation to be executed on the processor, and to cause the processor to generate the portion of the virtual hand and the graphical representation of at least a portion of the virtual being, the computer readable medium being a disk or a tape.

37. (Previously presented) The simulator of claim 35, further comprising a computer readable medium having instructions stored thereon to cause a palpation simulation to be executed on the processor, and to cause the processor to generate the portion of the virtual hand and the graphical representation of at least a portion of the virtual being, the computer readable medium being a portable storage device.

38. (Previously presented) The simulator of claim 37, wherein the portable storage device is a compact disk (CD).

39. (Previously presented) The simulator of claim 37, wherein the portable storage device is a digital video disk (DVD).

40. (Previously presented) The simulator of claim 35, further comprising a computer readable medium having instructions stored thereon to cause a palpation simulation to be executed on the processor, and to cause the processor to generate the portion of the virtual hand and the graphical representation of at least a portion of the virtual being, the computer readable medium being memory in the computer.

41. (Previously presented) The simulator of claim 35, further comprising a computer readable medium configured to store a computer readable program, the computer readable program being downloadable onto the computer readable medium over a network connection, the computer readable program having instructions to cause a palpation simulation to be executed on the processor, and to cause the processor to generate the portion of the virtual hand and the graphical representation of at least a portion of the virtual being.

42. (Previously presented) The simulator of claim 35, wherein the manipulatable object includes a housing of a mouse.

43. (Previously presented) The simulator of claim 42, the actuator being coupled to the housing of the mouse, the actuator configured to output the haptic feedback.

44. (Previously presented) The simulator of claim 35, wherein the object includes a mouse.

45. (Previously presented) The simulator of claim 44, wherein the mouse includes a grounded linkage.

46. (Previously presented) The simulator of claim 45, the actuator being configured to cause the grounded linkage to output the haptic feedback.

47. (Canceled)

48. (Previously presented) The simulator of claim 35, wherein the haptic feedback simulates a pulse of the virtual being.

49. (Previously presented) The simulator of claim 35, wherein the haptic feedback simulates a feature that is at least one of on the surface of the graphical representation and below the surface of the graphical representation.

50. (Previously presented) The simulator of claim 35, wherein the haptic feedback includes vibration.

51. (Previously presented) The simulator of claim 35, wherein the haptic feedback includes a spring force.

52. (Previously presented) The simulator of claim 35, wherein the object includes at least one receiving portion configured to output the haptic feedback.

53. (Previously presented) The simulator of claim 35, wherein the sensor includes a position sensor.

54. (Previously presented) The simulator of claim 35, wherein the sensor includes a force sensor.